

DRAGON USER

A stylized red dragon logo with its head turned back, facing the title.

The independent Dragon magazine

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May 1986

**Explore the Dragon's
hidden depths**

**Nitemove — thought
provoking strategy**

Arcade Arena

**Kung Fu — The Master
20 games to be won**



DRAGON USER



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How to submit articles

The quality of the material we can publish in
Dragon User each month will, to a very great
extent depend on the quality of the
documents that you can make with your
Dragon. The Dragon computer was launched
on to the market with a powerful version of
Basic, but with very poor documentation.

Articles which are submitted to Dragon
User for publication should not be more than
3000 words long. All submissions should be
typed. Please leave wide margins and a
double space between each line. Programs
should, whenever possible, be computer
printed on plain white paper and be accom-
panied by a tape of the program.

We cannot guarantee to return every
submitted article in program, or please keep a
copy. If you want to have your program
returned you must include a stamped,
addressed envelope.

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Editorial

AT LAST — the sun shines, the warm breezes blow, the bulbs begin to
sprout — and early evening TV has got just that little bit worse. It can mean
only one thing. Spring has finally arrived ... and with it, the promise of a
flurry of activity for the Dragon and its kin.

As far as events go, we've already had the Dragon "Weekend in Wales" (a
moderate success by all accounts) and then there's the Microdeal "6800
Convention" held only a couple of weeks ago (expect a full report next
issue). There's the John Penn show in Leeds coming up soon. But that's
not all.

Quite a bit of new software seems about to become available. Incentive's
Time Lord is well on the way (with mysterious rumours of a new mega-game
written by Eddie Steady Go programmer Jason Falous). Blady has plans to
release four new titles; Boulder Crash, Digger, Trun, plus its answer to
Knight Lore (J), Starman Jones and the Temple of Doom. More too from
Microdeal, of course, and newcomers Microvision. Lack of software? What
lack of software!

Thinking of games — the arcade addicts amongst you might be pleased
to notice our newest feature making its first appearance this month —
Expert's Arcade Arena. You'll be more pleased to know that it was brought
about largely due to the number of letters we received, demanding it!

So if there's a subject you want us to cover — Beginners' Basic maybe,
OS-9, Communications, anything — why not drop us a line? We can't
promise to answer everyone, but your pleas won't fall on deaf ears.

But one way or the other — it looks like it's going to be a long, hot summer
for the Dragon.

MICRODEAL HAVE DONE IT AGAIN!

THE USA'S CURRENT NO 1

SHOCK TROOPER

**The Greatest Hi-Res Graphic Arcade Game
Ever Written for Your Dragon/Tandy Colour 32K**



Welcome Shock Trooper Squad Commander! Intelligence has intercepted a coded message revealing a plan to conquer Earth. Four of your Shocktroopers must infiltrate the heavily defended underground enemy base and steal all of their secret TRG-5 attack saucer sub-assemblies. Return them to our scientists for analysis. This secret information is crucial to our defence.



Good Luck!



5 Star Review



The public can't be wrong. Shocktrooper was the TOP seller on our 1985 Roadshow selling twice as many copies as its nearest rival.

14 HI-RES (BLACK ON WHITE) ARCADE SCREENS UNIQUE INVISO DEVICES PLUS CORTA BOMBS. THE LATEST RELEASE FROM MARK DATA PRODUCTS IN THE USA.

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News desk

If you have any new products for the Dragon — software or hardware — ring the News Desk on 01-437 4343.

Show details

DETAILS have just been released concerning the forthcoming show, organised by John Penn Software, as reported in last month's *Dragon User*. The show is to be held in Coast Town Hall on Saturday 2nd May, with the doors open from 10am to 4pm. Admission will be £1.00 for adults, 50p for children under 10 and pensioners.

"Claret is located just south of Leeds off exit 42 of the M1," explained Helen Penn. "It's very accessible and very easy to get to."

Trade supporters at the time of going to press are Baby Computers, Computape, Eclipse-Pennar, Grooveron, John Penn and Paskach — although Helen was eager to stress that it was, "more than just a buying show." Other activities arranged so far include administration of robots, programming (by an anonymous Baby programmer) and an exhibition of work

performed by the Roman Museum at St Albans using a Dragon, who use a simple graphics program to compare and classify artifacts.

John Penn is still offering to play the expenses of anyone who would like to show off their particular pet project, so if you think yours might be suitable, give them a ring on Bordon 04203 5070.

Cumana manual

A FIFTY page publication is now available from Cumana Limited of Guildford, which introduces the reader to the Cumana disk drive operating system for Dragon 32 and 64 personal computers.

A copy of the *Dragon Disk Guide* is available free on request to Cumana Limited, Phoen Trading Estate, Broad Street, Guildford, Surrey.

China crisis

DRAGON users: MacGowan Consultants report their most unusual request yet for their Printer Control program — a conversion to print in Hebrew. Always ready for a challenge, proprietor Robert MacGowan is going to have his work cut out, as Hebrew prints out right to left, rather than the conventional left to right. Things could be worse, however, as he commented, "I'm drawing a request from China."

Those of an Oriental persuasion, and otherwise, contact MacGowan at 6 Anthon Drive, Caythorpe, Grantham, Lincs. Tel (0455) 70555.

Plug it!

DUPRUILO Electricals Limited has introduced an inexpensive solution to the problem of mains interference with sensitive electrical equipment,

such as your Dragon! The Mains Filter Adaptor fits directly into an ordinary wall socket and provides a continuous 'grounding' of the electrical supply to plugged-in appliances.

The Adaptor sells for around £18, from many electrical shops. The unit can be purchased direct from: IML, Blue House, High Street, Tenbridge, Kent. Cheques should be made payable to IML in the sum of £17.95.



Dragon User People's Chart Results March 1986

HAPPY 100 are again — back at the Dragon User People's Chart — and what a month it's been. A new number one... with Juxtaposition way out in front... and a new entry with Shaolin Master from Quickbeam. Who knows what will happen next month? Only time (and you, of course) can tell.

Once again, the programs nominated by chart entrants had us in stitches. Honourable mentions go to David Kelsall for sentiment (his programs on the Dragon), Mark Taylor for topicality (indeed his *Dragon* for us) — modestly forbids us from naming Mark Hawkesbee (Dragon User is great OK). In the end, the vote went to T. Filcott of Hyde, tale of woe for sheer veracity (I've the text to my address). Well done that man, and your prize should be reaching you shortly.

Remember — each month we will be asking you to vote for your top five Dragon programs of the moment — be they games, applications or utilities. Write them down in order of preference on the form opposite (or copy the form out) and send it in to us. Just to make things that little bit more interesting, we're also asking you to make up a phrase constructed from the letters of your own top three (using as many as possible) and we will pick out the one we consider to be displaying the greatest wit and perspicacity. The winner each month will receive £25 worth of software, donated by Microdeal. Go for it!

- 1 Juxtaposition (Wintersoft)
- 2 Speed Racer (Microdeal)
- 3 Shaolin Master (Quickbeam)
- 4 Eddie Steady Go (Incentive)
- 5 Shocktrooper (Microdeal)

Chart Four

Voting for Chart No. 4 closes at 1pm on Friday 10th May 1986. Entries received after that time will not be eligible for inclusion in that month's voting. The editor's decision is final. Only one entry per individual per month will be allowed.

My top 5: Voting Month 4

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

My phrase is:

Name

Address

THE DRAGON COMPUTER SHOW COMES TO YORKSHIRE

AT Osssett Town Hall
ON Saturday 31 May

AT 10.00am - 4.00pm

NOT ONLY will the leading retailers of DRAGON computer software, hardware and peripherals (Blaby : Compusense : Computape : Eclipse - Fenmar : Grosvenor : John Penn : Peaksoft) be there, offering some amazing bargains.

BUT ALSO there will be the opportunity to meet the Dragon experts. Look at the displays and watch the demonstrations of ways in which the Dragon is utilised. Have your queries answered by one of the leading Dragon programmers. See how the Verulamium Museum of St. Albans make use of the Dragon in their archaeological investigations, and watch a display of robotic control by the North West users.

Admittance : Adults £1.00
Children under 16 and O.A.P.s 50p

Easy access from M62 and M1 (Junction 40)
Ample car parking
Refreshments

If you would like to take part in the Show, in either of the above capacities, phone John Penn on 04203 5970.

Epic Venture

Program: Total Eclipse
Supplier: Eclipse-Farmer
Price: £9.95

BY THE time you read this review many of you will own copies of *Total Eclipse* and you will have found out whether or not it has lived up to expectations — I feel it has. It could definitely be described as the most typical game in Dragon history. And the most asked for ... in all series of the word.

This game, let us have no bones about it, owes a hell of a lot of galactic units to a game which has yet to see the dawn on the Dragon, *Elite*. When *Elite* came out it was hailed as revolutionary, not because of its trading elements, but because they had been contained brilliantly with some of the most complex three-dimensional graphics ever seen on a home computer and a superbly tight simulator which literally forced you to fly your way around the galaxy.

In *Elite*, battles were played out in full three-dimensional glory with many ships, all flying and fighting, on screen at the same time.

Total Eclipse has taken the trading and strategy elements of *Elite* and enhanced them, to make a game of great skill (although, at its heart, it is still Kingstimer's). However, to anyone who has played *Elite* it is a very poor second; the player is left prying at the keyboard for a full 3D space flight instead of a Cosmic Crusader type of game in which I have never had to fiddle more than a daunting one Pinat at a time.

It is unfair to compare it to *Elite*, however, and not a reviewer's job to say "That game's good, but there's a game which those of you with more than one computer can play called ... etc ... etc". On its own, the game stands up to the test; it is very additive, very challenging, and very good.

You, the player, are placed in charge of a small trading vessel, under-equipped to handle the rigours of interstellar trading but upgradeable, obviously, are available for prices which start at the

obscene and go up from there! Your job is to raise as much cash as possible and become the top interstellar trader in the universe.

To this end, you spend much of your time wandering around the galaxy buying things cheaper than the average rate, and selling them for more. Trouble is, space travel costs money both in fuel and in ship maintenance, so if your journeys aren't profitable because you haven't picked the right planets to trade between, your fuel-outlay comes to more than your profits, you lose money, and, take it from me pal, it's a dog's life when that starts happening. Everything spins downhill until you end up out of fuel floating around some galaxy or other somewhere.

The trading is easy to get to grips with, but not so easy to master. The simplicity is obvious but serves to disguise, or make oblique the subtlety with which made must be carried out.

I have yet to succeed in making a regular profit and my games consist mainly of flying around looking for damped narcotics to buy, or famine-stricken planets to sell food to.

The trading is, of course, only one element of the game. Also, intergalaxy arena-wrecked starships, the once proud but now vacuum-riddled remains of other such traders' ventures. The aim upon finding one of these is simple; board it, get the log book, get out before the ship self-destructs and take the log book to a space station to claim your reward.

There are asteroids to be mined (but there was no way I ever came close to finding even a fraction of the amount necessary to buy the mining equipment) for all to be sold to the space stations, as well as pirates, customs officers, galactic wars and all the other things you'd expect.

The game is simple to control, with joystick or keyboard controls, easy to read (as all the text has been re-defined and shackled up on the PICOE+ screen) and great to play.

There was a small bug in the review copy, but if they can get it out, this could be the game of the year!

Jason Osborne



Groovy

Program: Beantastaker
Supplier: Micro Vision
Price: £7.95

THIS game was written by the man who wrote *Jet Set Willy*, and *Manic Miner*; he is a brilliant programmer. This is a short review. In fact, this is a very short review.

Beantastaker is a Manic Miner-type game with 80 screens, and imposing difficulty instead of the access code to please all hackers, and the smallest but, once accustomed to them,

cutest set of graphics ever seen.

The game is wonderful, fabulous, plays well, looks fine, sounds groovy, packaged nicely, very addictive, a combination of skill and logic to test even the most intelligent player.

This was a very short review. With a game this good you can either rant about it for pages or simply say how good it is and stop talking. I'll stop talking now. Except to say buy it!

Jason Osborne



Fixer

Program: Disk-Fix (Dragon-Dis Only)
Price: £10 + 50p P&P
Supplier: Phoenix Ltd, 21 Wycombe Lane, Woodrow Green, High Wycombe, Bucks HP12 0HD.

THIS package is actually in two parts, *Disk-Fix*, and *Disk-Aid*. The first, *Disk-Fix*, is concerned with recovering damaged disks and includes an extensive sector editing facility. An option I found particularly useful was to search for the read Basic program header on disk and move to the particular track and sector. Space can also be reserved, via the Create command, for restoring files.

The *Disk-Aid* program is likely to be of more use in day to day use. This allows extended versions of many DragonDOS commands, like *RENAME* and *COPY*. Full wildcards are supported using a '?' to replace any character, and a '*' to replace any number of

characters. This is the same syntax as used by most disc systems, in particular CP/M.

The manual goes into great detail on the disc format used by DragonDOS, and is obviously written from extensive experience. Advice is given on how to recover from most types of disk and file errors. The layout of program headers on disks and directory entries are also explained in detail, covering several sides of the manual.

Having said this, it is still down to the actual user to recover any damaged files — the system is not as automatic as some other dedicated disk doctor programs. However, what you do get is a sophisticated disk editor, and some very useful disk utilities.

The software performed faultlessly through the review and is a good example of well written Basic blended with a little machine code where necessary.

Brian Cadge



Operation Code

Your first helping code — explained step-by-step by Orbaum and Campbell.

AFTER last month's gentle introduction to the art of assembler programming, we are going to get down to some serious brain damage this issue, with a small program (as promised last month), and a look through the simpler mnemonics (the lines of code that you and I can understand, rather than the numbers that are fed to the processor).

First, for those who prefer a slightly more coherent approach to the subject, a somewhat small bibliography. We have only come across one book truly excellent for the 6809, and that is "Programming The 6809" by Rodney Zaks and William Labak, published by Sybex (ISBN No. 0-89586-576-4). For the more advanced assembler programmer (what are you reading this for?) the Motorola specification sheet is probably worth a look, although we have never been able to get a copy.

The program listed this month is the clear screen routine mentioned in last month's

article. The format of the listing, working from left to right, is:

Address — In hexadecimal (or hex, this is base sixteen numerology — explanation in a later article), the address of the first byte of the instruction.

Instruction Operation Code — Generally known as the OP Code, as this is less of a mouthful, also shown in hex. This is part of what is passed to the processor to be interpreted.

Operand — Data for use by the processor — varies depending on the instruction.

Line Number — From the Encoder editor, purely decorative.

Label — Akin to the line numbers in BASIC, used as a reference for jumps and sub-routine calls, as well as for variable references.

Instruction Mnemonics — The (reasonably) understandable version of what is passed to the processor for reference.

Operand — This time in terms of labels or

however the programmer sees fit to express it.

At the bottom of the listing is a list of all the labels used, in alphabetical order, with their addresses in hex. Anyway, the only part of the listing we are really interested in is the right hand three or four (depending on outlook and upbringing) columns, which contain the actual code as written by the programmer. This portion is the most stable between different assemblers (i.e., not different processors, but different Dragon assembler programs), although there may be slight differences in the assembler directives — see later.

The best place to start explaining is probably at the top of the listing. The first two lines, along with the last line, produce no actual code for the processor, and are the aforementioned assembler directives. The second line positions the code at address 20000 in memory, and there will probably be a line very similar to this at the

0400		10	POINTR	EOU	#400
4E20		20		ORG	20000
4E28	C6 1F	30		LDB	#31
4E22	86 00	40		LDB	#128
4E24	8E #400	50	LOOP1	LDB	#POINTR
4E27	30 05	60		LDX	#X
4E29	A7 04	70	LOOP2	STX	#X
4E2B	39 #028	80		LDX	32:X
4E2E	9C #000	90		CHPX	#000
4E31	25 F6	100		BLO	LOOP2
4E33	100E #150	110		LDY	#400
4E37	31 3F	120	PAUSE	LDY	-1.Y
4E39	26 FC	130		BNE	PAUSE
4E3B	5A	140		DECB	
4E3C	2C E6	150		BGE	LOOP1
4E3E	5F	160		CLPB	
4E3F	66 68	170		LDB	#36
4E41	6E #400	180	LOOP3	LDB	#POINTR
4E44	38 05	190		LDX	#X
4E46	A7 04	200	LOOP4	STX	#X
4E48	39 #020	210		LDX	32:X
4E4B	8C #000	220		CHPX	#000
4E4E	25 F6	230		BLO	LOOP4
4E50	100E #150	240		LDY	#400
4E54	31 3F	250	DELAY	LDY	-1.Y
4E56	26 FC	260		BNE	DELAY
4E58	5C	270		INCB	
4E59	C1 20	280		CHPB	#32
4E5B	25 E4	290		BLO	LOOP3
4E5D	39	300		RTS	
4E5E		310		END	20000

DELAY =4E54

LOOP3 =4E41

PAUSE =4E37

LOOP1 =4E24

LOOP4 =4E46

POINTR=#400

LOOP2 =4E29

start of every program. The first line is an equate, and simply means that all references to the word `PCOUNTER` (see lines 80 and 180) within the program are replaced by the number \$400, or 1024, the start of the last screen in memory. This serves to make the program easier to read and modify. The last line marks the end of the program, and makes the execution address 20000. In this case, the execution address is the same as the start address, but this does not always have to be the case.

Op-code

And so on to the main code. As we have already described the registers we'll assume a degree of familiarity with them, but will try to drive in an understanding of the words `Operand` and `Op-code`.

Line 30 brings us upon, at last, our first Op-code; it is `LD8` which stands for `LOAD Halfword B` (`Load B`, without suffix) and then the `Operand` is 31. The # means "the number". If the command reads `LD8 31` it would mean "Load the B-register with the contents of location 31". The # tells the assembler that it actually means "Load the B-register with the number 31". This is very important. The reason that we are loading B with 31 is that we do not need a memory address to be "Offset" (the label used on the flowchart) as we have register B open. (The chances of being able to do this in a big program are about as great as the chances of finding delivering punctuality).

Line 40 is quite easy as we have seen it means "Load register A with the number (#) 128". Op-code is `LDA` (`Load A`), operand is #128 (the number 128). 128 is the screen code for a black square. If we store this number at memory locations that correspond to screen positions (the screen begins at \$400 (1024), the contents of `PCOUNTER` as defined by the earlier `EOU` command) and ends at \$5FF (1535), a black square will appear there.

Line 60 introduces us to our first label — `LOOP1`, pretty simple this, it marks the first place we will loop back to — and they told you machine code was hard! The `Operand` `LD8` is X with \$400, which is what the number `PCOUNTER` is equal to. If the command was `LDX, PCOUNTER` (so, without the #) X would be loaded with the contents of memory location \$400. Following?

Line 68: `LEAX B,X` — this is not so easy to explain as we will gloss over it until we cover the uses of the X and Y registers in a later article. It basically (so, in this program) adds the contents of register B to the contents of register X. The reason for this vagueness is that `LEAX` is a complex command with many different uses (Op-code: `LEAX` Operand: `B,X`).

Line 70, the second loop (thus labelled `LOOP2`) introduces us to another command `STA`, which quite logically stands for "Store the contents of register A". Thus `STA, X` means "Store the contents of register A in the memory location pointed to by X". Therefore, on the first run the number 128 (contents of A) will be stored at location \$400 + 31 (the contents of X), which is the end of the top line on the screen. This is the action line.

Line 80 adds 32 to the X coordinate using the `LEAX` command exactly as earlier, only with a number instead of a register. Note that there is no need for a # in this case. This command can be signed, i.e. to take 32 from X we need only write `LEAX-32,X`.

Line 90 introduces `CMFXX`. As you might guess this means "Compare X with". In this case X is being compared with the address of the bottom of the screen for obvious reasons (if you have understood the flowchart). (Op-code: `CMFXX` Operand: #6000). Well, `CMFXX` would compare X with the contents of memory location \$600 as described earlier.

Line 100 introduces a `BRANCH` command. In an article dedicated to their use next month, for now, this command means "Branch if Lower than operand of last compare instruction" thus, if X is lower than \$600 the routing loops.

Line 110: `Load` register Y with 400.

Line 120: Called upon as this is a loop designed to slow the program down, so that the effect is noticeable. This is achieved by decrementing the Y register, previously

loaded with 400, and using another branch (Line 130), BNE, to go back and do it again if the result is non-zero.

Line 140: `Decrement B`, subtracts one from the contents of the B register.

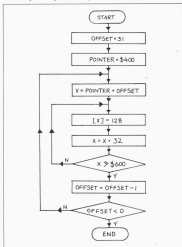
Line 150: "Branch if Greater than or equal to", back to the setting up of the X register. This instruction controls the movement across the screen.

Line 160: `Clear B` register. Equivalent to `LD8 #0`. This is to set the offset for the reverse back across the screen, which is performed by the code in line 170/200, in much the same way as the previous part.

Line 200: `Return from Subroutine`. Return control the routine that called the code.

Well, that about rounds it up for this month; no glossary, although in a few months we will present a complete list of 6800 mnemonics and their meanings over two articles in various tables for reference.

Next month we will present a complete explanation of all the assembler directives, a full coverage of addressing modes, and base numbering and a tutorial on the branch instructions.



Knight Games

A cunning brain teaser — brought to you by Pat McCabe and Colin Turner

NO ARCADE action this month — just a frustratingly difficult mind challenge, which is simple to play, but hard to complete. The idea is to move the chessboard cursor around a standard 8×8 chess board, using the cursor keys, moving as the knight does in chess.

Starting with blue and white squares, you must change them to orange and cyan by landing on them . . . but without attempting to change the same square twice. The computer checks for invalid moves and stops play if there's nowhere to go — so there's no chance of cheating!

Written in entirely position-independent machine code, the main playing screen is in semi-graphics and includes brief on-screen instructions and move counter. There are two levels of play — Level One starts in the same place everytime, Level Two starts on a random square.

To load the program, run the hex loader in Listing One and use it to enter the code given in Listing Two. When finished, save the code to tape with COMEIM "Mtemore" ASCII FOR B5500. To load it back in, use COMEIM, and when the OK message comes up, enter CASC 5500.

Naturally, if you want to fix code in smaller amounts, run the hex loader and enter the finish address you want to stop at — you then save to tape with COMEIM "Mtemore" ASCII A, 5500, where "M" is your finish address. Next time, you'd load in the code, but use "M" as your

start address.

However, if all that typing seems too daunting, an enhanced version (with a higher loading screen which auto-exits) is available for the sum of £2.50 from F McCabe, 20 Spire View Road, Louth, Lincs LN11 8SL.

Looking at the assembler listing (for those with assemblers) you might guess that we use newcomers to machine code. The program structure might not be all that it could be, but this is our first attempt — so anyone stuck with this, do as we did — stick with it and you'll get there!

```

10 * ENTER EACH LINE OF HEX
20 * DIGITS, PRESS ENTER THEN
30 * ENTER THE CHECKSUM
40 CLS
50 INPUT "ENTER START ADDRESS" : JN
60 INPUT "ENTER FINISH ADDRESS" : FN
80 FOR K=0N TO FN STEP 10
90 PRINT HEX(K) : " "
100 CH=0: INPUT "M=0"
110 FOR L=1 TO LEN(CH) STEP 2
120 M=ASC(CH)*16+ASC(CH+1):J33
130 CH=CH+UPOKE(L*H+1,U
140 A=0:J140X
150 PRINT " " : "
160 INPUT CH
170 IF CH=CHERR(CH) THEN GOTO ELSE 160
180 NEXT
190 END
200 SOUND550,5:PRINT "ERROR - ENTER LINE.
AGAIN" : GOTO 300

```

```

0134 17001000000000000000 = 700
0136 00100000000000000000 = 400
0140 00000000000000000000 = 300
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0144 00000000000000000000 = 700
0146 00000000000000000000 = 200
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0862 0000000000
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2359	1827888D3348FF1F288C	=	359	2359	84F782VF8188FF8384F7	=	885
235A	1F281827888A13C3883F8	=	385	235C	87F8888FF23888887F	=	308
235B	FF1F288C1F281827888D	=	383	235D	231C8838882341888FCF7	=	301
235C	3348FF1F288C1F281827	=	268	235E	FF28381F288FC8E477FF	=	348
235D	88827338881FAFF1F288C	=	478	235F	28381F288FC8E44A8882	=	472
235E	1F281827888D3348FF1F	=	384	2364	1CAF3388888888888818	=	384
235F	288C1F281827888D33C8	=	388	238E	FF8888888888881177FF85	=	844
2388	F88EFF1F288F1F888E18	=	51E	2388	8E18888F883F318C2888	=	423
238A	888F888F318888C88888	=	48E	2389	88848FA78887881FA788	=	587
238B	848FA78887881FA7888F	=	528	238C	3FA7888FA7882FA78888	=	448
238E	A7888FA78887FA788888F	=	588	23C8	8FA788888F88C11338E1	=	404
23C8	A788888F88C11338E118	=	438	23D8	8E1F28888FA788888888	=	458
23D2	8EFFFF313F28FF88E1F88	=	558	23D8	FF83838F53333888848F	=	35E
23D8	17888488FF8888881781	=	38E	23E4	28488F5848833884C848	=	241
23E8	24887C888888412818E8E	=	37F	23EE	548E18888F888F318C38	=	308
23F8	188888888A7888C18888E	=	37E	23F8	A8A8848FA78887881FA7	=	543
23FA	F88E1F888F1F2838888F	=	488	2482	888FA78888FA78887FA788	=	503
248A	88EC84182888438888E	=	431	248C	888FA788888F88C11F78	=	3E7
248E	88EC841888888A788E18	=	38C	2418	E1888888818818278814	=	444
2418	838A8C872C38888888818	=	333	2428	814E18278838888F5745	=	264
2422	28FF88188EFFFF178888	=	4FD	2428	4C4C28444F4E4528414E	=	28D
242C	178188841888888E8888	=	288	2434	4F344818332882414C45	=	28C
2436	17812438188F1F288F1F	=	25D	2436	282858884F5228E87888	=	285
2448	3888888F881828FF8888	=	348	2448	8A7788888888888888881	=	44A
244A	8E8F8F1788811788E884	=	418	2452	8E8888E8888888888888	=	584
2454	1888888E888817818438	=	281	245C	A8848848FA788C888FF23	=	4CC
245E	188F1F288F1F3838888F	=	3D3	2458	F38E8488888FA78888C84	=	473
2468	8818888F18FC1F888138	=	31F	2458	1E23F888888888888888	=	488
2472	1828FE4EC134182788173	=	322	2458	8C888833F8888887888E	=	583
247C	1828FE44384F533881341	=	318	245A	88841F888FA788388888	=	483
2488	4E275458474F88544845	=	288	248E	8C88F233F8888887881E	=	428
2488	5343215888FE88E88881	=	468	2488	8E843E88888FA7888888	=	413
249A	DF28881888DF8F888E81	=	458	248A	8C888E233F88888E188F	=	321
249A	FF28881888FFFF888881	=	48C	248C	A788888888823F8888187	=	483
249E	A8288818888FA7881881	=	38D	248E	84318C843238888FA7888C	=	383
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24C2	D828881888DF8F888881	=	488	24CA	843888288888E8E23F888	=	48C
24CC	FA1888FFFF8F188FA788	=	508	24D4	348788818E844188888A7	=	488
24D8	887888C11828F83388881	=	428	24DE	84388888888888123F888	=	444
24D8	8F278881CF271181DF27	=	3F1	24D8	88888131182788888132	=	2FD
24E8	1881FF27181888888888	=	488	24F2	1827888C88128182788182	=	1DF
24F4	A8A88818888888888888C	=	54A	24FC	88815888C88284888888	=	24F
24FE	C8281238888888888888	=	5C1	2488	8818888881881F88888E7	=	385
2488	288818888FA788F8F888	=	383	2718	8848888F3338848888888	=	418
2512	884F3F188FA788888888C	=	325	271A	8441F1888884F8818E8A8	=	328
251C	C18428F54C8184388F34	=	31A	2724	E78431A8283888888888	=	38C
2528	18881F88888818888888C	=	383	272E	F3C88888888888888888FF	=	3F1
2538	1818FF381E328F888C34	=	33D	2738	881F348488888F884888	=	43E
253A	188E188FFC1F88C178827	=	342	2742	F3388438288888888888	=	41E
2544	188C888438888888C138	=	352	274C	8E888888888F8848E88131	=	58E
254E	25F8F8D1F88888888888F	=	443	2758	A8E288888884A78F33388	=	48A

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Problem Readable hard copy for tape of "Snakes Alive" published in Dragon User, December 1984.

Enquirer Richard Crag, 210 Oxford Road, Bedford, Newcastle-under-Lyme, Staffs.

Problem Wanted — a shopping program to add/delete numbered items, total prices, store on tape.

Enquirer R E Sharpe, 8 Eastingia Lane, Redrille, Notts.

Problem Does any one know how to get Teletext (Dragon-Dos version) to print multiple copies.

Enquirer John Aggleyard, 17 Carr Bridge Avenue, Leeds — also F Jones, 581 Kingsnorth Road, Congon, Wolverhampton.

Problem Have Dragon 32 and would like to connect it to an Epson MX80. Can anyone tell me if this is possible?

Enquirer Simon Richards, 21 Brewery Road, Watchet, Somerset TA23 5AR.

Problem Have recently acquired second-hand Dragon Data Disc Drive, but there was

no manual with it. Could anyone locate a copy — or supplier — of the manual?

Enquirer J D Edwards, 18 Kappel Road, North Berwick, East Lothian.

Problem My cassette lead is broken. Where can I buy a new lead and how much would it cost?

Enquirer Matthew Docherty, 53 Scotland Way, Honeford, Leeds, W. Yorks.

Problem Need mic routine to dump Hi-Res screen to Tandy OGP-115 4-colour printer.

Enquirer Stuart King, 41 Gate-

head Road, Greenhouse, Kilmarock.

Problem How do I divert text to cartridge port instead of Centronics port?

Enquirer R Cameron, 86 Sommerville Gardens, South Queensferry, W. Lothian.

Problem What changes need to be made to the "Dragon Windows" assembly listing so it can run on a 16K Tandy CoCo running Extended Basic (July issue).

Enquirer 50 Lime Avenue, Bentley, Walsall, W. Midlands.

Problem Sprint Compiler —

Keyboard Fkeys for movement, etc, do not work when Basic is compiled. (Nothing happens when key is pressed). Help rewarded!

Enquirer Ed R Vint, 120 Austral Avenue, Dagenham, Essex.

Problem Using Dragonides — still have problems with the "Clear" command — sometimes the screen is frozen, so I have to reset. Can anyone help?

Enquirer P. Gault, Zwaan-shuude 70,2606 JZ Rotterdam, Holland.

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Taking Control

Your very own machine code monitor — written by Peter Whittaker

ONE OF the limitations of Basic is that it does everything for you, and so hides the operation of the computer from view. If we turn to machine-code programming, we can gain full control of the machine, but we lose all of the safeguards provided by Basic. There are no syntax checks to prevent one from trying to EXEC meaningless code, and the Break key will not stop a runaway program. Even pressing the reset button will not help on every occasion. It is to help reduce these problems (especially for novices following our machine-code series) that this monitor program has been written. The program and its uses can be best explained by EXEC'ing it and exploring what it can do. (This code fits on graphics pages two and three, so it can be used with or without a disc drive.) Load in the code from Listing Two using the Hex Loader (Listing 1) and save with `SAVE#164, "MONITOR", 3000, 9979, 3000`.

Functions

The program is called by `EXEC3000`, and will display its option list. The available functions are: Alter memory, Examine memory, Fill memory, Copy memory, Display memory as p/b or text, Check memory works, Register information, Set Breakpoints, Clear Breakpoints, Jump to machine code, Go to a machine code subroutine, and Return to Basic. Each is called by pressing the appropriate key. All addresses used by the program must be given in hexadecimal. (Four digits 0000-FFFF.)

<A>—Alter memory from XXXX. After pressing the **<A>** enter a two byte address from which you wish to start altering the memory contents. The screen then clears to display four columns of information. The first is the memory address, the second the value stored at that address, the third the character given when the value is printed to the screen, and the fourth is the character given when the value is poked to the screen. The print and poke characters are not always the same. For example, `PRINT C=PB(0)` gives a blank, while `POKEing 0` to the screen produces an inverse `0`. The display will show several memory locations above and below the location to be altered is indicated by the flashing cursor, and can be changed by pressing the up or down arrow keys. To alter the value stored, just type in the value. To return to the options list, press the **<Break>** key. This routine can be demonstrated by first entering the Basic program: `10 CLEAR 200,30000`. Then `EXEC the Monitor`, and select the **<A>** alter memory routine. Give either 1000 or 2400 as the start address, depending on whether or not you have a disc drive attached. The screen

should clear to show the Basic program listed down the columns. Now change the values stored, from 200,30000 to 200,30000, and then press the **<Break>** key. Call the monitor, and list the Basic program. Sure enough, it has changed to: `10 CLEAR200,30000`.

<E>—Examine memory from XXXX. Again the program requires a two byte address (XXXX-FFFF) and then clears to display the information. The screen is divided into rows of blocks of eight locations. Pressing the up or down arrows will scan through the memory one line at a time, whilst pressing **<Shift>** at the same time will move a whole page. Pressing the **<Enter>** key will switch between displaying the information as ASCII characters or as numbers, whilst pressing the **<Break>** will, as usual, quit the routine. If you call this routine, and enter XXXX as the start address, you can page through the Monitor program. It will probably be pretty meaningless as numbers, but if you press the **<Enter>** key, it will be displayed as text, and then you will be able to find the location of the monitor messages stored in memory.

A very similar function is provided by the **<F>** poke screen routine. When an address is entered, the computer will display the memory as text `POKE'd` to the test screen. As mentioned above, printed characters are not always the same as poked characters.

Memory

The memory can be scrolled by pressing any of the arrow keys. Using the **<Shift>** and up/down arrows will scroll the memory through one screen page (512 bytes). Pressing the **<Enter>** key will print the address of the top/left byte of the screen display, and thereafter a key press before continuing. Press **<Break>** to return to the Options screen.

<P>—Fill memory from XXXX to YYYY with ZZ. This routine, as implied, fills a block of memory with a value between 00 and FF. It then returns to the menu screen. This is easily demonstrated by first resuming some graphics memory (`POKE#0,0`) and then filling from 1000 to 3000 with any number from 00 to FF. This can then be checked up on either with the monitor, only displaying the graphics memory itself, (`PMODE4,0:SCREEN1,0:EXEC41194`). One use of this routine is to fill an area of memory outside a machine code program with the value 0F. This is the code for a Software Interrupt (see below), and if a runaway program jumps into this area, it will be redirected to the monitor routine.

<C>—Copy memory from XXXX-YYYY to ZZZZ following. This routine copies a block of memory from one location to another. It is a bit like the `PGCOPY` command for the graphics pages, but will work with any area of memory. It requires the start and end address of the source block, but only the start address of the destination. Once done, the program returns to the menu.

<M>—Memory check from XXXX to YYYY. This routine is used to check that the computer memory is working properly. It works its way from the start address to the end, poking every possible number to each address as it goes. It then checks to see whether each location has stored each number properly before moving onto the next address. If a location does not store a number properly, for example, the program `POKE's` a two, but the location stores a seven, it means one of two things. Either the memory location is defective, or it is not RAM but ROM, and its contents are meant to be permanent. (ROM equals 20000 and above.) If the routine finds a defective memory location it prints a "failed" message and waits for a key press before

```
10 "HEX LOADER FOR DRAGON MONITOR.
20 "BY PETER WHITTAKER.
30 INPUT "START ADDRESS":START
40 INPUT "FINISH ADDRESS":FINISH
50 FOR N=START TO FINISH STEP 8
60 PRINT N;" "
70 TT=0:INPUT A#;Z=0
80 FOR M=1 TO LEN(A#):STEP2
90 L=VAL(""&A#&MID$K A#,L,2)
100 TT=TT+L:POKE N+Z,L
110 Z=Z+1:NEXT M
120 PRINT " "
130 INPUT T
140 IF TC=0 THEN PRINT"error - ENT
    ER L THE AGAIN." :GOTO50
150 NEXT N
```

Listing One

returning to the menu. Otherwise the program works through to the end address, displaying a "Passed" message at the way, and then waits for a key press before returning to the menu. To demonstrate this routine enter the block 0000-9100, and the routine will respond immediately with a 0000 FAIL message, this is because address 0000 is part of the Basic ROM, and not RAM. Try again and use addresses 0000-0400. This is the top line of the test screen, and you will see the memory being tested as the routine runs. A little lower down the screen, you will see the current address, and a PASS message. However, if you were to enter 0400-0500 as the block, although the memory would pass at first, as soon as the test reached the part of the screen where the ADDRESS PASSFAIL message is printed, the memory would fail the test. This is not due to the memory being defective, but because the program is changing the memory contents to print the message. So, if you get a memory failed message, it does not always mean that the memory is not working properly, but a third thing — it is already being used by something else.

Control

It is with the , set breakpoints command, that we move from the realm of the interesting to the indispensable. As mentioned above, machine code does not have any of the safeguards of Basic to stop programs from running out of control. This routine is a help to overcome that problem. When this routine is called, it will wrap the byte at the address entered, for a Software Interrupt (SWI) instruction. The byte is reserved in a table for later restoration. When the machine code is then run, it will execute as normal, until it encounters the SWI, where the program is interrupted. All 6800 registers are stored on the "stack" and control is redirected via the interrupt vector to the Register Information routine (see below). The program can set up to ten breakpoints, and these are all displayed on the register information screen.

Pressing the <X> clears all the breakpoints set using the function. The previously inserted SWI commands are replaced by the original code, and the program returns to the menu. SWI commands placed using the <F> will command or the <A> for memory routine are not affected.

The register information screen called by the SWI command can also be accessed by pressing the <R> key. The screen will show clear to display the contents of all the 6800 registers (PC, A, B, X, Y, U, S, P, C). When called from the menu screen, they do not reveal very much about what the computer is doing, but when called by a SWI command, they give the exact state of the computer as it was before it obeyed the interrupt. This enables one to check out whether or not a piece of code is working in quite the way it should. Pressing the <Q> key will cause the computer to continue from where it had got to. (Make sure that you are returning it to the start of a valid instruction, as the inserted SWI command

replaces one byte of the machine code, whilst some instructions are three bytes long.) Pressing the key will call the alter registers routine, whilst any other key will return the program to the Options screen. If the alter mode is selected, a flashing cursor works its way down the registers, and you must type in the desired values for each. The value entered into the Program Counter is the address to which the computer will transfer control. However, before the computer quits the routine it will wait for the <Enter> key to be pressed. Any other key will cause it to run through the register routine again. This is in case you enter the wrong values into the register.

Routine

By a careful combination of this register routine and the setting of breakpoints, pieces of machine code can be tested with little fear of them going out of control. To demonstrate this, PC, 6AHS and the BASIC Monitor. Select the <A> for memory routine, and using 1000 as the start address, and enter the machine code for Listing 42 (second column from the left). Quit the routine by pressing <Break>, and then <J> to jump to the code at 1000. As the code runs, it will come across the SWI command, and be redirected to the register information routine. Here we can observe

the status of the registers. Press <Q> to continue, and see if you can follow the machine code to the results displayed on the screen the next time it is displayed. Once you understand what it is doing, try experimenting with it. Press the key and enter some values into the register. Make sure that the Condition Code register is set to a safe value, and that the program counter is set to return to the routine.

The last two functions are called by the <D> and <C> keys, and are the jump to a piece of machine code and Go to a machine code subroutine. The first will leave the monitor program, and follow wherever the machine code should lead it, whilst the second will also follow the machine code but return to the monitor when it reaches the end.

To escape from the program press the <Break> key, and the computer will return to its normal functioning. (However, the interrupts and breakpoints will not be reset, so, for example, if you set a breakpoint at location 0007, the computer will return to the monitor every time you try to quit it.)

If you do not fancy typing in the program, I am willing to supply copies on tape for £2.50. I will also provide a version configured to reside in high memory rather than on the graphics pages. Send a cheque to Peter Whitaker, 73 Newish Street, Cambridge CB2 1ND.

MACHINE CODE LISTING

7501	11	PRT
1000	20	ORG #1000
1000 4F	30	ESTRT CLR
1001 5F	30	CLR
1002 000000	30	LDX ,#0
1003 10000000	30	LDY ,#0
1004 0001	40	LOOP #004 #1
1005 0000	40	SUBB #2
1006 0004	40	LDX A,X
100F 0123	40	LDY Y,Y
1011 3F	40	SWI
1012 FE1000	50	JMP LOOP
1015	60	END ESTART

3000	000C778F01070470	730	4000	115000140000	800
3001	007004000100200F10	740	300C	1100100040F1140000	810
3002	400004000000F00010	750	300D	117000240000011010	820
3003	400001000000000070	760	300E	000400F1140000117000	830
3004	000300778F00001007	770	300F	001400000100100000	840
3005	000300144010070070	780	3010	F01140001070000044	850
3006	015000700000001000	790	3011	000001000070000010	860
3007	007300144010070000	800	3012	400001700001400000	870
3008	014010070000001400	810	3013	000000000000000000	880
3009	1007010001401007	820	3014	017000140000010010	890
300A	0000015010070000	830	3015	000000000000000000	900
300B	0140100700000140	840	3016	000000000000000000	910
300C	100700010014071007	850	3017	000000000000000000	920
300D	007300000000000000	860	3018	000000000000000000	930
300E	000010070001400000	870	3019	000000000000000000	940
300F	110140000001140000	880	301A	000000000000000000	950
3010	1150001400001101	890	301B	000000000000000000	960
3011	000100711400011500	900	301C	000000000000000000	970
3012	000140000110140000	910	301D	000000000000000000	980
3013	007114000115000140	920	301E	000000000000000000	990
3014	0000110140000001	930			

Listing Two

5000 1802847282028474F= 375
 5000 28535342524F5554= 536
 5000 4342432855555555= 624
 5184 80283C8272556168= 632
 5112 3528455849542854= 524
 5120 4F28424153494380= 479
 5120 28535342524F5554= 536
 5126 4648404C28484324F= 588
 5144 4028882844425358= 445
 5152 4C41392846524F40= 578
 5168 28535342524F5554= 536
 5168 5245535328455155= 584
 5176 414C53282845555555= 398
 5184 28535342524F5554= 536
 5192 4743535445522853= 577
 5200 544154555328455155= 584
 5208 4343285345474953= 544
 5216 5445532828455155= 584
 5224 2841285345474953= 582
 5232 5445532828455155= 584
 5240 2842285345474953= 588
 5248 5445532828455155= 584
 5256 4445534545432853= 585
 5264 4147452828455155= 584
 5272 28535342524F5554= 536
 5280 5445532828455155= 584
 5288 28535342524F5554= 536
 5296 5445532828455155= 584
 5304 28535342524F5554= 536
 5312 4143482828455155= 584
 5320 28535342524F5554= 536

5328 4143482828455155= 584
 5336 28535342524F5554= 536
 5344 5545542828455155= 584
 5352 42532454148554F49= 598
 5360 4654532828455155= 584
 5368 4154282828455155= 584
 5376 2848544552285345= 573
 5384 2828288828555243= 576
 5392 4654285445555542= 551
 5400 445324F4028282828= 417
 5408 28455342524F5554= 536
 5416 284554454044F5553= 537
 5424 465324F4028282828= 417
 5432 28434F555328282828= 411
 5440 5345542842532841= 558
 5448 48534F43425342841= 566
 5456 545328284545454545= 555
 5464 5253284345454545= 555
 5472 2888284144442828= 416
 5480 535328284555555445= 538
 5488 2828534415455553= 548
 5496 8858415353884541= 446
 5504 43428414C5445532= 525
 5512 28455424F55532828= 537
 5520 465324F4028282828= 417
 5528 8858474F535554228= 416
 5536 4144455245535328= 558
 5544 2D282841444453245= 429
 5552 535328434F4445532= 513
 5560 5853454C54285545= 588
 5568 484532828455555555= 144

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Pure Speculation!

This year's Budget gave a boost to small investors — so Brian Cadge was asked to take stock of Sharebox

IF YOU are already an investor in stocks and shares, or are just thinking of entering the world of "Capital Gains, Dividends and Forecasts" then *Sharebox* from Harris Micro Software is worth taking a look at.

Sharebox is a share management program which will help you keep on top of all your holdings of stocks and shares, helping to analyse their performance over the year. As with most of Harris's software, *Sharebox* uses their own custom 40x24 screen and keyboard driver. The character set has been improved and now gives a noticeably cleaner looking text. The keyboard driver includes autowrap and a disabled break key. The key repeat rate can be altered by the user, as can the background colour of the text screen (although the default settings seem to be ideal).

The share management software actually consists of two programs: *Sharebox* and *Shareprog*. These can be run individually, or called from each other. *Sharebox* deals with the creation of files and their maintenance, while *Shareprog* is used for the creation of all reports.

Both programs are menuform-fill driven and include some limited error checking. This consists mainly of having three input types: numeric, date and alphanumeric. There is also some checking of numeric values at key points of input, although one point I found irritating was that the program will not accept "01/08" as a valid date; "03/08/80" must be used.

Screen

The screen is divided into three sections, the top line displays the option heading, program name, and data type of the input required (eg NUM for numeric), and the bottom line is used for options selection, error and help messages. The main section of the screen is used for the menus, forms and reports. When entering data the cursor keys can be used to edit the current field, or move to the next or previous field. Shift-down arrow gives a line of "help" at the bottom of the screen, which usually consists of an explanation of the data type required, and shift-up arrow returns to the main menu immediately (for aborting incorrect entries).

After an initial sign-on message, *Sharebox* presents a main menu screen consisting of nine options. The first option to be used must be either "Create new file" or "Open existing file". Up to 99 separate files of various lengths can be opened on each disk (provided there is enough disk space). Each file is selected by its file number, and optional password. A filename is also given; this is printed at the top of reports, etc, but is not the actual filename given to the disk file.

Each share record is identified by a "short name" of up to eight characters, used to sort and retrieve the records. For example, "UnitNews" could be used as a short name for "United News". When retrieving a record, once a match is found for a short name, the user is allowed to accept this record, continue the search or look at the preceding or next record. If no match is found then the "nearest" is offered.

Records

Within the share record are fields for full name, security code, group number, dividend months (up to 4), estimated yield per cent, purchase price, current price, number of shares held, capital gains, tax credits and dividends. The share prices may be quoted in pounds or pence (up to a maximum of 999.99 in pence). There are 30 group numbers, covering most types of shares. This group number can be used with the short-name for selection of particular records within the reports program. Any field of a share record can be changed at a later date (apart from the short name) either by directly selecting the "change record" option, or automatically from within other options.

Sharebox handles 12 "periods" of time, keeping the prices of the shares for each record for each period. Once the 12th period is started, the price of shares in the first is lost and so on. This information is again used within the reports program. The length of time between one period and the next is entirely up to the user, and need not be the same for each period.

Once all the initial data has been entered, it is a simple matter of keeping the files up to

date with share prices for the current period, and any buying or selling you do. One of the problems with *Sharebox* appears when you select the option to buy some more shares. A share record can only hold one purchase price, and one value for the number of shares held. However, you will more than likely buy more shares at a later date, and at a different price. Harris suggests that users use different share records for different "vintages" of share purchases, and although this will work, it seems a bit of an annoying fudge.

This problem also affects the "Get Shares" option. This asks for the number of shares to be sold and the selling price. From this it calculates the capital gains made by the sale. This will be incorrect if the shares sold were bought at a different price from the original purchase price. The program gives you the opportunity to typewrite the correct capital gains if that calculated is incorrect. The share record is then updated with the new holding and capital gains for the year. The user is allowed to start a new year at any time, and so zero the current values of dividends, capital gains and tax credits.

Dividends received are entered by selecting option six. The program prompts for the income received and the tax credit. This information is then added into the particular share record.

All reports from the share management system are produced by the other program on the disk, *Shareprog*. There are six different reports that the program can produce for each file. The data to be included in a report can be selected by range of short name, and by range of group number. Some reports also allow selection by range of period or months. All reports

SHAREBOX	POSTINGS	PROGRAM	NUM
MAIN OPTIONS			
1	...	CREATE NEW FILE	
2	...	Open Existing File	
3	...	Buy Shares	
4	...	Change Share Record	
5	...	Sell Shares	
6	...	Receive Dividend	
7	...	Change Share Prices	
8	...	Run Reports Program	
9	...	End Program	
TYPE CHOICE (1-9) <0>			

Can be sent either to the screen or printer. Output to printer being generally requested, taking advantage of the full 80 columns and is automatically pagged for 11" paper. One limitation is that only one file may be accessed at once (there is no cross-referencing to other files).

Briefly, the different reports provided for are as follows. Firstly, there is the "List Share Valuation" option. This produces a report on the valuation of shares, from two different periods, and the profit or loss resulting. The default values for the two periods are the original purchase price (period 1) and the current value (period 2).

The "Last Capital Gain" option shows all share records which contain capital gains or losses (i.e., during the current year). The "Last Dividends Received" option shows all the dividends and tax credits received to date in the current year, and calculates the yield percentage (the dividends as a percentage of the holding at the current price).

A potentially useful report is the "List Income Forecast". This will show all the shares which are expected to pay dividends within the range of months selected, and will estimate the dividend

Price changes in shares over a period of time can be shown with the next option. The default for the period is from the original purchase to the current price. The report shows the start price, and price and the percentage change.

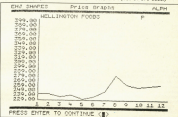
The final report allows a graph to be drawn of the price changes of particular shares over the 12 periods. This gives a

visual indication of their performance. If the screen is selected then a simple line graph is drawn, or on a printer the graph is drawn using '*' characters. Because of the vast differences in share prices, different scales are used on different graphs, therefore one has to be careful when comparing output for different shares to take into account the scale.

Overall, Sharebox functioned extremely well under all tests. The displays are clear and well laid out and the data structure seems sensible. The 30-page A4 manual is up to Harris' usual high standard, explaining each step clearly, with a useful contents

page at the beginning. Apart from the fairly minor problem of having to have different "vintages" of shares, I would happily recommend Sharebox. The program deserves to do well, but just how large a market there is for software such as this on the Dragon remains to be seen.

Program: Sharebox Share Management Program. **Requires:** Dragon 32 64 and DragonDOS/Currents Dos 2.0 and optional printer. **Price:** \$16.99. **From:** Harris Micro Software, 48 Alameda Blvd, Housatonic, Middlesex, TN2 4HP. **Tel:** 01-570 3035.



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Abstract

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Dragon Answers

Talking Port

I AM building a speech synthesizer from my Dragon 32 for use in conjunction with the cartridge port. What I need to know is how to send and receive data via the port, i.e., what memory addresses to use. I would also like to know how to output the sound input pin 25 (SND) to the television.

I have tried to find the answer in many Dragon related books, but none of them even touch on the subject of the cartridge port.

Brian Campbell
69 Southern Dr (2nd)
North Hinkley
Oxford
OX2 0LA

THE bit 8800 address bus is brought out to the cartridge port, so the addresses you read depend entirely on your interface address decoding. To maintain compatibility you should arrange for I/O to be above 65535.

Cartridge sound is selected by clearing bit 3 of \$FFFF and setting bit 2 of \$FFFF and bit 2 of \$F0F2. The signal applied to Pin 25 should be suitable for feeding directly into the sound multiplexer.

New Command

IN JANUARY 1986 Dragon User, I have just read that there are three variable routines, \$GOSAVE, \$DORSAVE and \$CLOCKSAVE, but there is no variable routine for checking for quotes on the command line, eg. VERIFY "intro". Is this the routine for checking for variables for the quotes?

Also, is it possible to change existing Basic commands to your own commands, i.e. NEW to NEW.

Michael Clark
84 Woodland Road
Haleswood
Livingston
Midlothian
EH20 1XP

IF YOU just want to check for a quote character, then the routine you need is \$CHAR at address 32264. The B register should contain 34 as only.

More likely, you need the routine \$QIN at address 32478.



which will deal with the string variable, whether in quotes or as a variable name. See the Firstware series for details on this routine.

It is possible to change the Basic commands to your own. To do this you must copy the ROM's command names and address tables down into RAM and alter the pointers at 288216 and 291312 accordingly. You can also PEEK into the same table to change command names to anything you like, with the constraint that the length of the command must remain the same.

Monitor

RECENTLY I purchased a 'Green Monitor' for my Dragon 32 computer, but it seems that this monitor is not fully compatible with the Dragon.

The problem is that the quality of the picture reproduced on the screen, especially when the Dragon is in the text mode, is such that lines appear to 'flicker' quite a lot, and only when I turn it down with the 'contrast' button can I really read very faintly whatever is on the screen. A friend of mine suggested that I should take the colour chip off its housing in order to improve the quality of picture because it is this chip which is causing all the interference.

Michael Piergigi
36 Laneside
Stirling
Midlothian

SEVERAL problems could be causing the symptoms you describe with the monitor. Firstly, the Dragon's monitor output has an impedance of 75 ohms, and some monitors require 75 ohms. A suitable feed can solve this problem.

Another cause of flickering is the mains frequency, which must be compatible with both the computer and monitor to keep the display synchronized. However, the Dragon's display is most particularly good when fed into a green screen monitor unless the test is inverted — black on bright green just does not seem to work very well.

I certainly would not recommend moving the video chip, as it seems unlikely that this could cause the problem, and in any case you should seek expert advice before interfering with any chips or your could end up with no display at all!

Recover

I OWN a Dragon 32 and would like to be able to recover Basic programs after using the command NEW. I have used PEEK 25,30 and PEEK 26,30 as I have been told that memory locations 25 and 26 hold the Basic program.

So far I have only been able to recover just some of the old programs. I don't know the correct values to reset these locations with. Please could you tell me the right values or tell me how to recover my programs any other way within Basic.

Michael Guyone
Dorwell
Jusartville
Harrowford

Basic programs can be recovered providing that you have not entered any program lines since typing NEW. Type in the following line as a direct command and wait for the OK prompt to appear (this may take several minutes for a long program).

FOR I=PEEK(\$1256+PEEK(\$25
TO \$2787: IF PEEK(I)=PEEK(I+1)

➤ THEN NEXT

Next type the following, again as a direct command:
I=I-PEEK(\$2787:NOT(\$256+PEEK(\$256+PEEK(\$271+256)
The program should now be restored, and can be listed.

Disks

I HAVE just recently purchased a Camerra Disk Drive and DOS. What I want to know is, will the DragonDisk Disks you can buy from software companies work on the Camerra Disk system, as I am not sure and I don't wish to buy any disks until I know the answer.

Michael Holloway
3 The Mount
Edinburgh
Dorchester
South Portland

CUMARR Dos 2.0 uses the same disk format and commands as DragonDisk 1.0, and is compatible with most programs. I say most programs, as I have not had a chance to study the Camerra ROM in detail. Basic programs should be no problem, but my best advice would be to check before ordering a program.

Routine

I AM currently writing a database program for the Dragon 64 and DragonDisk. I want to be able to access the extra 32K from machine code, but I have no idea how to go about this. Could you please write a small routine to demonstrate how to use the extra RAM?

Smith Luck

THE \$3794, 32K of RAM is paged into bytes \$3798 to \$5215 by writing to address \$FF0F. The ROM's can be re-allocated by writing to \$FF0E. When accessing the extra RAM with Basic/Doc running, it is necessary to disable interrupts as these would cause the program to crash when the ROM's are disabled.

You could incorporate the routine below into your own program. This will return the byte at address X in RAM to the A register. A similar routine can be written to store a byte at address X by replacing the LDR with STA.

ANDCC = \$330
STB SP0F
LDA ,X
STB SP0E
ORCC = \$16
RTS



Ordi. Of the ways round the lack of new adventure releases for the Dragon is, of course, for people to start writing their own. I do receive home-grown adventures quite often, and though I always respect the amount of hard work that goes into creating them, the majority do have to be sent back with a letter of criticism, as I can't give space in the column to an adventure that isn't fully de-bugged and that I can't recommend other readers to buy.

Just occasionally, however, one comes along that is a little bit special and I'm glad to draw people's attention to it. The last was one called *The Minds of Flesh* that arrived several months ago, and which has now been published by Quickbeam Software. I'll be taking a longer look at that next month, but this month I'm happy to recommend an adventure called *Space Trek* I got from reader M. Entwistle, who's decided to call himself Broomek. He told me the adventure took him about 50 hours of programming time, and about 10 hours of preparation, and it's that preparation which shines. A lot of thought has gone into this game, and it shows that you can still come up with something different if you set your mind to it, although I'd like to see the file changed to something a little less obvious.

The first part of the program loads in the optional instructions and mission briefing, and though the cassette tapes weren't ready with my review copy, I'm glad to see that the provisional inlay was quite detailed and the instructions on-screen are comprehensive and also invite you to write to Broomek for help, if stuck (well, it makes my life easier).

Mission

The scenario might just sound vaguely familiar to you, that the fifth starship, the *Endeavour*, was launched in 2552 in order to find the previous four, all gone missing. Only two months after the launch the crew (well, most of the crew) has fallen ill with something nasty called *Rigelian Fever*. The only known cure is an antitoxin stored on Rytelayn, which you don't happen to have in your medicine cupboard right now. Nor do you have the distilling equipment you'll need to produce a perfect and pure antitoxin. Fortunately Rytelayn has been located on the planet Holberg by your Science Officer, Mr Selvon, who sounds like something you'd buy at the chemist to rub on chapped lips. You've got permission

from Starfleet HQ to land on Holberg, as over to you the *Adventure Player*.

The unusual thing about this adventure, for a Dragon game at any rate, is that you actually control four characters. You've given a menu screen initially inviting you to choose the one you start off with, but in playing the game if you type MENU as a command, you can switch to one of the other characters. As happens in *The Heroes of Kam* on the Spectrum, Amstrad and other machines, only certain characters can perform certain tasks, so if you're having no luck with one, try asking another to do it. The instructions say that only Selvon can nervepinch someone, and I can't wait to encounter someone who seems worth nervepinching.

Characters

The characters all start in different places, and the response time as you switch between them is very quick indeed. Captain Christopher James, for instance, begins in the command seat with a row of labeled switches in front of him. He can see his Captain's Core-Unit and exits gong North and East. One criticism of the game is that the screen display could do with tidying up. "EXIT GUN: N: E:" doesn't look very good, and neither does the line being printed at the end of the first location description.

Back to the Core-Unit, however. If you examine it you see it has five buttons: three to summon the other main crew members, one to summon a security guard and one to switch the machine off. You might want to summon one of the other members to try their luck with a task you're finding tricky in your current incarnation, so you press the appropriate button and your location description is updated so that you can also see the second character. Switch to them to try solving the problem, and naturally they can also see the first character in their location description. Very neat work.

With James in the command seat, Selvon at the Scientific Officer's main post, Engineer Harishh McCorinda in the engineering section and Spomers in the sick bay (don't panic, he's the doctor), away you go. The next reason for enjoying this adventure is the trouble that's been taken to give you the feeling that you're actually in a spaceship. The location descriptions are only brief, but there are plenty of them,

interconnecting nicely, and with other characters in different parts of the ship this is all very effective.

You'll need your mapping skills and lots of paper, because there are at least six levels of the ship, with a lift to take you between them. Step out of the lift on the first floor and you're on the bridge, with exits leading East, West and South back to the lift. There are exits in all directions if you emerge on Level Two (the sick bay), Level Three (a corridor) or Level Six (the transporter room). The other two levels take you to the engineering section and the shuttlecraft. In addition to that, though, and at all the locations that are on each level, you can also climb between floors using the service hatches. I found such a hatch on Level Four, went through it and up a ladder, crossed over and climbed down a service vent and there I was on Level Three, where I had a brief encounter in the briefing room.

I can't tell you much about the problems as yet, because I've been spending my time trying to map out this spaceship, just making a note of where various objects like tools and protective clothing are. There is a SAVE option, and apart from the screen layout and a vocabulary that could be extended a bit, I think this is an excellent adventure. I've no doubt that it is a healthier climate for Dragon software the author would have found a larger software house to publish it, but here's duplicated copies himself and they're available for £4 from Broadcatt, 30 Broadcatts, Witley, Garden City, Herts AL7 1HF. Worth every penny, and I hope to be looking at *Space Trek* in next month.

One thought that occurs to me, and which I throw out to any anticipating software houses that might be reading: completions are the thing at the moment, and a company called Global Software has just published a four-pack of Spectrum adventures that have already been released but rather neglected, which is excellent value at £7.95. Why not the game for Dragon adventures? There's plenty of good material out there, some of it no longer easily available, and I know from the size of my mailing every month that there's still a large potential market. How about it, someone?

Devoting all that space to one new adventure means I'll have to try to cram everything else into the last few columns inches. A lot of readers (reading help, so

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maybe you can pitch in and sort them out if I can't. This is a two-way thing, remember, so if you've ever received a clue from anyone, see whether you can't do the same for another adventurer.

Richard Reed, 37 Edgeworth Drive, Fallowfield, Manchester M14 6PU having trouble gazing into the yellow pool in *El Diablero*. Try another cabot, Richard.

S. Gaboriau, 40 Albany Road, Garsington, Coventry CV5 6LU asks about Salamander adventures he was trying to track down: Franklin in Wonderland and White Cliffs of Dover. A few copies of the former are around, but the review copy I received of the latter responded with an "Out of Memory" error when loaded. I doubt if finished copies were made available, as it was at the time when Salamander were cutting back on Dragon releases. Anyone seen one? This reader also thinks he's solved Jerusalem Adventure, but having found "treasures" he's got nowhere to put them (no comments please) and can't score more than 15/108. Over to you.

Julian Steinwenders if anyone can let him have a copy of the instructions for Dragon Data's Adventure Trilogy, which he bought at the First 6666 Show. All he's done so far is stand in an arena and get killed. Any tip to Julian at Howells Cottage, Friday Street, Rugeley, West Sussex RH12 4DA.

G. Asherhurst of 48 Fosseway, Syston, Leicester LE17 8NF offers help on Dragon Mountain, but is stuck in Sea Quest! How to get the soula gear, and if you need a credit card then where is it? WOOD WOOD NIGHT ESUD HICA EBN WOOD HWA EFB is all

I have to say to you Mr. Asherhurst.

Darren Part of 12 Preston Court on the wonderfully named Lumbertula Estate, Northampton NN3 4HQ, is playing Justaposition and having no luck getting into places like the fort, shaft and pyramid. Looking at my maps, I think it's just a case of typing ENTER, Darren. If that's wrong, perhaps some reader would put Darren right, if only for the pleasure of addressing an envelope to the Lumbertula Estate.

N. Nichols, 10 Museum Way, Beller, St. Yarnmouth, Norfolk NR21 5NY, how to cross the bridge in Treacher, escape security robots in Lost in Space and enter still in Mountains of Mist. Dominic Dickinson, 23 St John's Road, Rowley Park, Stafford ST17 5AX, in Black Sanctuary, what to do with ash the Bishop's ghost gives you, and what use is the woman?

Gary Caggins, 85 Farnington, Glascoate Heath, Tarnworth, Staffs various problems on El Diablero and needs a gun in Mansion of Doom. Richard Heath just wants to see his name in lights, or Dragon User anyway. But also needs help in several places in Treacher and Justaposition, and wants to know where to buy Sea Quest. Shennagans, Calisto Island and Black Sanctuary in a word, Richard. RETSAMHODUT. Sorry, can't get out of the habit. Touchscreen, that's Unit 5, Begun Industrial Park, Begun, Port Talbot, West Glamorgan SA12 7DU. Telephone: Brion Ferry 620310. Richard's at 66 Newcastle Road, Leek, Staffs.

And I'm at the end of the column. Isn't it clever the way it always finishes at the bottom of the page. I don't know how we do it.

Adventure Contact

To help puzzled adventurers further, we are instituting an Adventure Helpdesk — simply fill in the coupon below, stating the name of the adventure, your problem and your name and address, and send it to Dragon User Adventure Help-

line, 12/13 Little Newport Street, Llandudno WCH2 7YP. As soon as enough entries have arrived, we will start printing them in the magazine.

Don't worry — you'll still have Adventure Trail to write to, as well!

Adventure
Problem:

Name:

Address:

May 88

Adventure Contact

Adventure Problem: I have been to Brown and have the Deeds of Brown. What do I do with the cryo belt and the transmuted receiver? How do I get the elevator without dying? **Name:** Stuart Chambers.

Address: 13 Hayscliffe, Durston, Blandford, Dorset DT11 9PE.

Adventure Shennagans, Ring of Garkine, Mansion Problem: I can't find the Gold Token or Knife. How to get out of the apartment? How to open the door? **Name:** Ian Greenhaugh.

Address: 162 Albert Street, Milton, Cambs LA16 4AB.

Adventure Treacher Problem: How do I use the teleport and how do I open the access panel in the environmental control? **Name:** Paul Marlow.

Address: 50 Lime Avenue, Bentley, Walsall, West Midlands WS2 5UP.

Adventure Franklin's Temp Problem: I have reached the main hall, have been in many rooms, cannot get out. Help! **Name:** Hywel Perkins.

Address: 13 Thomas Street, Trettonnas, Newport, Gwent.

Adventure Shennagans Problem: How do you get out of the apartment? **Name:** Russell Regan.

Address: Lwerna Cottage, 2 Melbeck, Kirby, Stephen, Cumbria.

Adventure Shennagans Problem: Can't get past the puzzle stage. What significance the muggers and police? What does the billboard say? **Name:** T. Jenkins.

Address: Llyn Helyg, Newport, Pembrokeshire SA42 0GG.

Adventure Justaposition Problem: Can't find Deeds of Brown or how to get away with the Emerald Emerald. **Name:** Paul Dixon.

Address: 106 Longfellow Road, Lower Garsell, Dudley, West Midlands DY5 3DH.

Adventure Lost in Space Problem: How do I get the ship to land? **Name:** Jonathan Old.

Address: 18 Collingham Green, Little Sutton, South Wirral, Cheshire.

Adventure Justaposition Problem: How do you get the elevator? **Name:** Paul Marsh.

Address: 7 Colnwood Crescent, Clifton, Barnsgate, Kent CT12 5LG.

Adventure Return of the Ring Problem: How can you get the Magic Stone back from Human Village without them laying land mines? **Name:** Geoff Lorrimer.

Address: 1 Deepdale Drive, Morton Park, Carlisle CA2 8LS.

Adventure Mansion of Doom Problem: When I shoot the wirecut the route down disappears. What should I do?

Name: G. Lorrimer.

Address: 1 Deepdale Drive, Morton Park, Carlisle.

Adventure Justaposition Problem: Where is the Yellow ID Tag? Where is the righteye shield? How do you get into the tower? **Name:** Richard Marsh.

Address: 7 Sandstone, 59 Nicholas-at-Wade, Thame, Kent CT17 6PE.

Adventure Treacher + Justaposition Problem: How do you get across the chasm? How do you get off the second balcony? **Name:** Mark Crover.

Address: 39 Lincoln Road, Wappingborough, Lincoln LN4 1EG.

Adventure Mystery of Jiva Star Problem: Cannot find ruby on ship. **Name:** Peter Reate.

Address: 7 Rochester Avenue, Farnham, Middlesex.

Adventure Calisto Island Problem: How do I get the cane from the serpent in the temple? How do I get the keys from the leader on the beach? **Name:** Gary Turner.

Address: 102 Westgate Road, Bilton, Doncaster.

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Source: *Journal of Management* 1991, 17(1), 65-80
Key words: uncertainty avoidance; personality
dimensions; leaving the present of leaving
firm; getting new education; uncertainty
avoidance; risk; test
The study was conducted in the United States
and the United Kingdom. The participants
were, from the United States, 100 students
from the University of California, Berkeley,
and from the United Kingdom, 100 students
from the University of Manchester. The
results showed that students from the United
States had a higher uncertainty avoidance
score than students from the United Kingdom.
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the United States had a higher risk-taking
score than students from the United Kingdom.
The results also showed that students from
the United States had a higher score on the
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Abstract

also known as the "little green bird" or "little green chick" (L. *l.*). It is a small, green, downy bird, about 10 cm long, with a yellow beak and feet. It is found in the same habitats as the other species, but is more common in the coastal areas. It is also found in the same habitats as the other species, but is more common in the coastal areas.

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The Numbers Game

Gordon Lee makes a connection between cornflakes and maths — with 20 Blaby games at stake!

LAST MONTH I concluded with a question of probabilities involving three boxes and six marbles. The answer to the question as posed is that you would be most unwise to accept the bet at even odds, as there is only a one in three chance of you winning the bet provided that the colour of the hidden marbles given as being of the same colour as the one that has been revealed. In this case the bet is really that the box chosen will be one of the two with like-coloured marbles, as opposed to the chance of selecting the single box with the unlike marbles. Looked at another way, at the outset there are six marbles — three of each colour. If the revealed marble is red, then the chosen box cannot be the one with the two white marbles, so two white marbles can be removed from the reckoning. This means that of the three marbles that are still hidden, only one is white and two are red. Therefore, in this situation always mind the colour is guessed before the marble is removed.

Oddds

When assessing odds in everyday life it comes as no surprise to find that the total winning expectation is usually in direct proportion to the odds. For example, a bet of six, one paid, on a horse race will have a relatively high chance of success (as there are a limited number of horses running in a race), but the total amount won will be proportionately small. Conversely, the same amount staked on the football pools may net the jackpot, but, of course, the odds against this happening are many, many times greater. The actual prediction of the odds in these cases is difficult due to external influences, but in games such as roulette for example, the winning odds paid are directly related to the probability of the bet winning. Thus, the red/black, even/odd, high/low type of bet pays off at even, a bet on a single number will win, at 35 to 1, it is

worth by 521, that is, $52 = 51 \times 50 \times 49 \times \dots$. The final computation is a staggering 58 digit number.

Perhaps more familiar is the type of competition which, for want of a better name, might be called the "cornflake" competition, due to the fact that they are frequently to be found on the packets of breakfast cereal. To enter, it is necessary to arrange a list of features (usually relating to the price on offer) in correct order — or at least the order decided upon by a "panel of experts". As an example, if there were 12 features listed the number of possible permutations will be 12! — that is 479,001,600. In other words you would need to submit over 479 million entries to be certain of a winning line. Sometimes the competition is made a little easier if only the top eight features need to be listed — that is, the four least important features can be disregarded. In this case the calculation would be $12 \times 11 \times 10 \times 9 \times 8 \times 7 \times 6 \times 5$, a reduction on the previous value, but still an enormous amount of stamp-taking to be sure of sending in a winning entry!

Occasionally, the actual order need not be specified, it being necessary to only name the eight features in any sequence. This increases our winning chances quite considerably as we can divide the previously computed odds by 8! — that is, factorial eight. The actual number of possibilities will now be: $12! / 8! = 45$. Now there are only 45 combinations possible.

You should now be well prepared to tackle this month's competition problem: During stocktaking at the local toy shop, a tray containing 36 ordinary dice was knocked to the floor.

The dice scattered around, coming to rest with an assortment of faces on top. Can you determine what the odds would be of all 36 of the dice coming to rest with the sixes uppermost? For the answer we need to know the exact composition down to the last digit!

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Prize

This month, we have a treat for all you mortal arts fans — 25 copies of *The Blaby Hit, Karp's 'n' The Master*. This game, in the ancient traditions of the Eastern mystic arts, allows you to meditate serenely on Life, the Universe and Everything — and then smash the living daylight out of a few Dragon sprites! All good cheer fans.

Rules

To win a prize, you must first show the answer to this month's competition and how you solved it, with the use of a BASIC program written on your Dragon. For the sake of our little Trays, please do not send in a

clippings containing the program.

Make sure that your name and address are clearly printed on your entry — and don't forget to mark your envelope 'May Competition'. Envelopes without the magic words mysteriously disappear on reaching the Editor's desk.

And so to this month's teabreaker, complete the following phrase in less than 10 words — 'I got a kick out of my Dragon because...'. As usual, preference will be given to the more inventive efforts.

February winners

In February, we were giving away incentive prizes — and the lucky winners were as follows: Charles Daly of County Cork, Gino; Wynn Roberts of Portsmouth, Mini-Dragon;

Justin Hewitt of Hilden, Staffs; Steven Woolhouse of Bromley, Kent; G. A. Hunt of Carlisle; Lancia M. Amatozzano of Basingstoke; Simon Aubrey of Swindon; Wills; Alan Newton of Cwmbran; E. A. Newman of Aylesbury, Surrey; Jon Sangsack of Chesham, Devon; F. J. Taylor of Ashton Road, Middlesbrough, Cleveland; Luis Martinez of San Sebastian, Spain; Rachel Edmunds of Sedgely, Co Durham; P. D. Madocks of Tipton, Barbs; A. Wilson of BPTD 106. Congratulations one and all.

Solution

Finally, for those who still might be struggling away — the answer to the puzzle was — 840845 + 740160 = 9152051.

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